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CATALOG OF 156 CONFIRMED EXTRASOLAR PLANETS AND THEIR 133 PARENT STARS

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RESUMEN

En este artículo presento dos catálogos, el primero contiene los datos observados e inferidos de las estrellas que poseen planetas extrasolares confirmados. Los datos que reporto para estas 133 estellas son: masa estelar; tipo espectral; clase de luminosidad; periodo de rotación; metalicidad [Fe/H]; luminosidad absoluta; radio estelar; temperatura estelar; edad y número de planetas que posee. El segundo catálogo, contiene los datos de los 156 planetas extrasolares que giran alrededor de las 133 estrellas. Este catálogo reúne todos los datos disponibles de los planetas extrasolares: masa mínima y elementos orbitales; inclinaciones; radio del planeta; distancia promedio a la estrella; signo de la torca de marea (si se conoce el periodo de rotación estelar); la Irradiancia sobre el planeta suponiendo un albedo geométrico de 0. La ventaja de este trabajo es reunir el mayor número de datos observados o inferidos tanto de los planetas extrasolares como de la estrellas a las que orbitan, en un solo catálogo. Se reportan varios planetas cuya órbita está *totalmente contenida dentro de la órbita sincrónica de la estrella.*

ABSTRACT

I present two catalogs. The first one contains the observed and infered data of all of 133 stars wich harbor confirmed extrasolar planets. For these 133 stars I report the following data: stellar mass; spectral type; luminosity class; stellar rotation period; stellar metalicity, [Fe/H]; absolute luminosity; stellar radius; stellar temperature; age and number of planets host by the star. The second catalogue lists data for 156 confirmed extrasolar planets orbiting around the 133 stars. This catalogue contains the following extrasolar planet data: minimum mass and orbital elements; inclinations; planet radius; average distance to its parent star; tidal torque sign (if the stellar rotation period is reported); total irradiance assuming zero albedo. The usefulness of these catalogs is that they contain in a single paper all of the available data of the extrasolar planets, and their parent stars. Several planets whose orbits are *completely contained inside the star's syncronous orbit,* *are reported.*

Key Words: **EXTRASOLAR PLANETS, PLANETARY SYSTEMS**

Contents

1. INTRODUCTION

In the last decade 133 stars have been reported to harbor planets, however the total number of confirmed extrasolar planets orbiting these stars is 156, implying that some stars harbor more than one planet. So far the number of multiple exoplanets systems is 17 (Schneider, 2005).

The vast majority of the planets have been discovered through spectroscopic thechniques from which the periodic variation of the star's radial velocity (component in our line of sight) is detected. This periodic motion results from perturbations on the star's motion due to one or more planetary companions. Since the inclination of the orbit with respect to the plane of the sky is not known, spectroscopic measurements gives us only a minimum for the star's velocity around the common center of mass and hence a minimum mass for the perturber or perturbers.

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There is a strong bias towards large planets with small semimajor axes, because these are the ones that produce the largest perturbations on their parent star motion. Small planets produce very small perturbations even if they orbit close to the star and may be undetectable with the current precision. Another interesting bias is for large planets on faraway orbits due to their long orbital periods. In this case the star has to be observed for several years in order to obtain a good radial velocity curve that later can be fitted assuming the gravitational interaction with one (or more) large planetary companion.

The unknown quantity is always the inclination of the orbit with respect to the plane of the sky except for the few so called "transiting planets". The larger the inclination is (towards 90 degrees), the more similar is the measured star's radial velocity to its total velocity and hence the more accurate is the inferred mass of the planet. When the inclination is unknown, the fitting of the radial velocity curve provides a minimum mass for the planet.

Two observing groups have made most of the extrasolar planets discoveries. The Anglo-Australian group, lead by Geoeffrey W. Marcy and R. Paul Buttler known as the California & Carnegie Planet Search Team which obtain their measurements using several telescopes mainly, the Keck Observatory, the Lick Observatory and Mac Donald's observatory. The other group is the Geneva Extrasolar Planet Search Programmes lead by M. Mayor, D. Naef, F.Pepe, D. Queloz, N.C. Santos and S. Udry. Their program includes the Coralie Survey for Southern Extrasolar Planets (La Silla, Chile), the ELODIE Northern Extrasolar Planet Search (OHP-France) and the M-Dwarf Pogrammes. Users of this catalog are welcome to visit the internet pages and/or papers(see references) to find out more details about the instruments and detection methods of the various quantities reported here. Most of the very basic information about the extrasolar planets can be found in the Internet without much effort. However, *when it comes to the characteristics* of the parent stars, things become really entangled because the information is spreaded in numerous papers and catalogues, over many years.

All I did was to gather specially the hosts stars data and organize them in a useful form so they can be found immediatelly. In some cases there are non-negligible differences for the same quantity as reported in different papers or lists. For instance, the spectral type is sometimes controversial or simply not determined. Minor variations that my be considered negligible or not, (depending on the calculation one is trying to make), are the rotation period of the star, the planet's orbital excentricity and or minimum mass. On each case I decided to take the data as reported by the discoverers either on the web or on the paper itself. If a star is classified between two spectral types and one of them is main squence, then I classified it arbitrarily as a main sequence star. When possible, incomplete spectral types reported by discoverers were taken from Simbad if available. Other non-reported quantities are calculated here.

2. 133 HOST STARS

The first table presents the stars in essentially the same order as found in Schneider Catalog (2005) hereafter (SC). That is, by increasing semimajor axis of the exoplanets. The star's identification is by their Henry Draper (HD) number unless they do not have one. In this case the identification is the number and letters of the most known catalog in which they appear. No constelation related names are used.

I wanted a list as complete as possible for the host stars data, unfortunately for several of them I could not find either, effective temperatures (T_{eff}), Luminosities, (L_*), radius (R_*), or any of the aforementioned quantities. Therefore I decided to proceed as follows: I divided the whole set of 133 stars in 6 groups, depending on which of the three aforementioned quantities was missing in the reported information:

Case 1

If none of the three quantities were found *and the star is classsified as main sequence*, I calculated them through the Kippenhan models using first the mass-radius relation as follows:

$$\frac{R_*}{R_\odot} = \left(\frac{M_*}{M_\odot}\right)^\eta \tag{1}$$

where $\eta = 0.8$ if $M_* \leq 1M_\odot$ and $\eta = 0.57$ otherwise, which are the average exponents I obtained from Kippenhan's plots of $\log[M_*/M_\odot]$ vs. $\log[R_*/R_\odot]$. Then the luminosity is calculated through the mass-luminosity relationship between $-1 \leq \log[M_*/M_\odot] \leq 1.5$ which gives an exponent $\beta = 3.2$, that is:

$$\frac{L_*}{L_\odot} = \left(\frac{M_*}{M_\odot}\right)^\beta \tag{2}$$

and from there the effective temperature considering the star as a perfect black-body:

$$T_{eff} = \left(\frac{L_*}{4\pi R_*^2 \sigma}\right)^{1/4}. \tag{3}$$

The total number of stars in this case is 12.

Case 2

The star's radius is reported but no temperature or luminosity. In this case I kept the reported radius, calculated L_* using Eq.(2), and obtained T_{eff} from Eq.(3). Only 2 stars were in this case.

Case 3

No stars with reported luminosity but no radius and no temperature reported.

Case 4

Effective temperature reported but no luminosity and no radius. I kept the reported value of T_{eff} and calculated the radius with Eq.(1), and then obtained the luminosity solving for L_* in Eq.(3). There were 4 stars in this case.

Case 5

Luminosity and temperature are reported for the star but not its radius. I kept the values reported and found R_* from Eq.(3). There are 23 stars in this case.

Case 6

Temperature and radius are reported, but no Luminosity. I solved Eq.(3) to obtain the luminosity using the reported values of the other two queantities. There are 30 stars found in this case.

For the first 5 cases I used the Kippenhan Models which are exclusively valid for main sequence stars (luminosity class V). Hence I only applied the Kippenhan models to main sequence stars. Recall these models do not take into account the metallicity of the stars. Therefore the calculations are only good approximations to the unfound data.

Depending its case, each star has a superindex right after the identifier (or name) indicating which quantities were calculated and which were found in the litrature.

In Table 1, I list the following stellar data:

Column (1) Reference number in this catalog.
Column (2) Star's identifier.
Column (3) Spectral type and Luminosity class.
Column (4) Stellar mass in $M_\odot$.
Column (5) Luminosity in $L_\odot$.
Column (6) Effective Temperature in Kelvin.
Column (7) Metallicity [Fe/H] dex.
Column (8) Rotation period in days.
Column (9) Stellar Radius in $R_\odot$.
Column (10) Age in Myr
Column (11) Number of planets host by this star

For not main sequence stars which had no luminosity reported, but found estimated stellar radius and effective temeperature, I used Eq. (3) to calculate the luminosity. All of the stars whose luminosities were calculated in this way, have a superindex $^+$ right after their identification name.

For the main sequence star No. 73, HD12661 for which I found no data of its luminosity I took the reported radius and effective temperature given in Fischer *et al.* (2001) and used Eq. (3) and solved for Luminosity.

For the star "HD219449" (No. 49) I could not find the data of its mass, which is surprising to me since the orbit of its planet is apprently well determined except for its excentricity. Therefore for this star which is a K0III, no calculations were performed, it has no metallicity reported either, or rotation period.

Finally I excluded star OGLE-235/MOA-53 which appears in SC, because I did not find enough data, not only about the planet but also, and specially about the star.

3. EXOPLANETS CATALOG

In Table 2, I report the propperties of 156 exoplanets sorted by increasing semimajor axis of the planet as they appear in SC catalogue, except that I took the values directly from the literature.

There are two stars for which the existence of a second planet was controversial until very recently. The star HD 128311 (No. 86) appears with one planet in SC and two planets in Marcy's catalog. The second planet has been already confirmed (Voght, *et al.* ApJ preprint, 2005), therefore I listed the data they report in this last paper for the two planets around HD 128311.

The system HD 41004 is a close visual binary composed by a K2V star (HD41004A) plus a M4V star (41004B) (see http://obswww.unige.ch∼udry/planet/hd41004A.html). Both stars host one planet each, as reported by the CORALIE team. I put the information as presented by them; the companion of HD 41004B (No. 120 in Table 2) has a minimum mass of 18.37 M_J and is interpreted as a brown dwarf (Santos *et al.* 2002). However its host star **HD 41004B is not reported in Table 1**, because I found no data on this star except its spectral type. On the other hand HD41004A is the star No. 99 in Table 1 and its planet is No. 119 in Table 2.

The 156 exoplanets (icluding the brown dwarf mentioned above) are listed in the same order as their parent stars in Table 1, that is, by increasing semimajor axis. All of their identification names are the name of its host star followed by a letter **b, c, d** etc., according to the number of planets that the star hosts. The order of the letters **b, c, d** is not

related to the distance between the planet and the star, it only represents the cronological order of their discovery.

Table 2 contains the following quantities:

Column 1 Number of planet in this catalog.

Column 2 Name of the planet

Column 3 Mass of the planet in Jupiter masses (M_J)

Column 4 Planet radius in Jupiter Radius (R_J)

Column 5 Semimajor axis in Astronomical Units (AU)

Column 6 Eccentricity

Column 7 Orbital period (days)

Column 8 Average orbital radius (AU)

Column 9 Irradiance (ergs cm^{-2} s^{-1})

Column 10 Apoapse distance r_a divided by the radius of the star's syncronous orbit r_s.

Column 11 Inclination (degrees)

All of the planet data reported here come from the literature, and although some differences appear between different authors, I chose again the data as reported by the discoverers (see references).

In what follows I explain the calculations made in this work and not found in the literature.

Column 9 Is the average ammount of energy, I, in units of 10^6 ergs, per square centimeter, per second that reaches the planet's surface assuming zero albedo, that is:

$$I = \frac{L_*}{4\pi a^2(1+e^2/2)^2} \quad , \tag{4}$$

where $r_a = (1+e^2/2)$ is the average distance of the planet to the star.

Finally, *Column 10* is the planet's orbit apoapse $r_a = a(1+e)$ divided by the radius of the star's syncronous orbit. The radius of the star's syncronous orbit, r_s, is given by:

$$r_s = \left(\frac{P_{rot}^2 GM_*}{4\pi^2}\right)^{1/3} \quad , \tag{5}$$

where P_{rot} is the star's rotation period, M_* is its mass, and G is the gravitational constant. This calculation is only possible (of course) if the star has a rotation period reported.

The very basic assumption behind this calculation is that at least, to a first aproximation, the orbital angular momentum of the planet is parallel and has the same direction as the spin angular momentum of the star. Based on this assumption one can get from this calculation an approximate idea of which of these extrasolar planets are inside or outside the syncronous orbit.

If this ratio is less than 1 then the planet's orbit is completely contained inside the syncronous orbit and therefore it is subjected to a negative torque which decreases its orbital angular momentum (and energy). This decrease is due to the lag of the star bulge raised by the planet. Being inside the synchronous orbit, the planet revolves around the star faster than the star rotates. Therefore the tidal bulge raised on the star by the planet points to a certain angle that falls behind the planet angular position at any time in its orbit, causing a decrease in the planet's angular momentum and energy. If no other forces are considered the unavoidable fate of the planet is to eventually fall onto the star, however slow.

If this ratio is grater than 1, then the planet is "safelly" outside the syncronous orbit and the average tidal torque is positive. The star's bulge is always pointing ahead the planet's angular position and therefore, the planet is increasing its orbital angular momentum and energy moving outwards however slow, because the bulge that it raises on the star is probably very small.

4. DISCUSION AND RESULTS

Before I fully enter the discussion of results I present the following few statistics made over this star and planet sample. Table 3 shows the number and percentage over thew hole either star or planet sample of the characteristics indicated in the fist column.

TABLE 1

STATISTICS

Proppery	Number	Percentage
Luminosity class V	98	73.68
Luminosity class III	5	3.76
Luminosity Class IV	15	11.28
No Luminosity Class reported	15	11.27
Stellar rotation reported	81	60.9
Metallicity Reported	131	98.5
Negative Tidal Torque	22	14.1
Planets with a less than 1 AU	59	37.8

From the previous table one can see that there is a serious lack of measurements of stellar rotation periods. Almost ~ 40 % of the star sample does not have a reported rotation period. On the other hand almost all of the stars have a measurement of $[Fe/H]$; however, I must warn the reader that these

reported measurements come from different works, and are not necessarilly consistent amongst them in the sense of callibrations, instruments and or methods. Nevertheless these values are useful to make statistics or even approximate theoretical models.

About 10% of the star sample have no determined Luminosity Class which is an important parameter for studies of extrasolar planets around evolved stars.

To me, the most striking result in this paper is the 22 planets whose orbits are completely contained inside the synchronous orbit of the star.

All migration models assume that planets formed relatively far away from the star and migrate inwards. Aside from the main controversies around this process in its several scenarios, they all begin with a flat disk around the star through which the formation and migration of the planets take place. The newly formed planets loose angular momentum by interactions with the inner and outer parts of this keplerian disk. Hence it is consistent to assume that most probably the majority of planets formed in these disks, have prograde orbits and therefore as in our own Solar System their *orbital angular momenta* are parallel and in the same direction as the spin angular momentum of their stars. These 22 planets pose a new question: if these planets arrived to their present positions through migration, how did they manage to cross the synchronous orbit? outside which, the torques on their orbital motions are positive. One possibility is of course gas drag. Another possibility is that somehow as the star rotation speed decreases its synchronous orbit moves outwards leaving these planets in a new position inside the synchronous orbit. Last but not least important is to consider the possibility that these planets formed *in situ*, that is, very close to where they are found now and therefore their chemical composition has to be dominated (by a large quantity) of very refractory elements or compounds. Venus has the largest albedo in the Solar System due to its atmosphere which is mainly composed by carbon dioxide. Hence the chemical composition of these planets can have a large albedo and a large abundance of heavy elements that did not moved far from the star due the high inner temperatures in the disk, and hence may have formed these planets that have large gravitational fields such that they can retain their heavy materials. Nevertheless their unavoidable fate is to fall onto the star because even if gas drag is still present, its effect works in the same direction as the tidal force on the planet caused by the lagging bulge it raises on the star.

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TABLE 2

HOSTS STAR DATA

Star No.	Identifier	Spectral Type	Mass $M_\odot$	Luminosity $L_\odot$	T_{eff} K	[Fe/H]	P_{rot} days	R_* $R_\odot$	Age Gyr	Number of planets
1	OGLETR56	G - -	1.04	-	-	-	-	1.12	-	1
2	OGLETR113	K - -	0.77	-	-	0.14	-	0.765	-	1
3	OGLETR132	F - -	1.35	-	-	0.43	-	1.43	1.4	1
4	HD73256[5]	K 0 V	1.05	0.69	5570	0.29	13.9	1.03	0.83	1
5	GJ436	M 2.5V	0.41	0.025	-	0.25	-	0.43	-	1
6	HD75732[5]	G 8 V	0.95	0.61	5250	0.16	38.5	0.96	5.0	4
7	HD63454[5]	K 4 V	0.8	0.26	4841	0.11	-	0.84	-	1
8	HD83443[5]	K 0 V	0.9	0.88	5454	0.35	35.3	0.92	3.2	1
9	HD46375[1]	K 1 V	1.0	1.0	5770	0.34	-	1.0	-	1
10	TrES-1[6]	K 0 V	0.87	0.5	5250	0.001	-	0.85	-	1
11	HD179949[2]	F 8 V	1.24	1.99	6155	0.02	9.	1.24	-	1
12	HD187123	G 3 V	1.06	1.35	5830	0.16	25.4	1.18	-	1
13	OGLE-TR-10	G - -	1.22	-	-	0.12	-	-	-	1
14	HD120136[2]	F 8 V	1.3	2.31	6498	0.28	3.3	1.2	2.0	1
15	HD330075	K 1 -	0.7	0.47	5017	0.08	48	-	6.2	1
16	HD88133[+]	G 5 IV	1.2	3.06	5494	0.34	48	1.93	-	1
17	HD2638	G 5 -	0.93	0.47	5192	0.16	37	-	-	1
18	BD103166[6]	K 0 V	1.1	0.62	5400	0.50	-	0.9	-	1
19	HD75289[5]	G 0 V	1.15	1.99	6000	0.29	15.95	1.08	5.6	1
20	HD209458[5]	G 0 V	1.03	1.61	6025	0.04	14.4	1.02	5.	1
21	HD76700[4]	G 8 V	1	1	5423	0.14	-	1	-	1
22	OGLETR111[+]	G - -	0.82	0.43	5070	0.12	-	0.85	-	1
23	HD217014[1]	G 5 V	1.06	1.2	5946	0.20	28.	0.03	-	1
24	HD9826	F 8 V	1.3	3.4	6210	0.1	10.2	1.4	-	3
25	HD49674[1]	G 5 V	1	1.0	5770	0.25	27.2	1	-	1
26	HD68988[1]	G 2 V	1.2	1.79	6338	0.24	26.7	1.1	6.	1
27	HD168746	G 5 -	0.88	1.1	5610	-0.06	-	-	-	1
28	HD217107[4]	G 7 V	0.98	0.94	5700	0.32	39	0.98	7.76	1
29	HD162020[5]	K 2 V	0.75	0.25	4830	0.01	-	0.79	-	1
30	HD160691[5]	G 5 V	1.1	1.77	5813	0.32	31	1.05	2.	3
31	HD130322[5]	K 0 V	0.79	0.5	5330	-0.02	8.7	0.83	0.35	1
32	HD108147[5]	G 0 V	1.27	1.93	6265	0.20	8.7	1.15	2.17	1
33	HD38529[+]	G 4IV	1.39	5.96	5370	0.35	34.5	2.82	-	2
34	HD13445[5]	K 0 V	0.8	0.4	5350	-0.24	31	0.84	-	1
35	HD99492[6]	K 2 V	0.88	0.33	4954	0.36	-	0.79	-	1
36	HD27894[5]	K 2 V	0.75	0.36	4875	0.3	-	0.79	-	1
37	HD195019[4]	G 3 V	1.02	1.06	5600	0.0	24.3	1.01	3.16	1
38	HD6434[5]	G 3 V	0.79	1.12	5835	-0.52	18.6	0.83	3.8	1
39	HD192263[5]	K 2 V	0.75	0.34	4840	-0.14	9.5	0.79	-	1
40	Gl876[5]	M 4 V	0.3	0.014	3200	0.0	-	0.38	-	2*
41	HD102117[5]	G 6 V	1.03	1.57	5672	0.3	34	1.02	-	1

TABLE 3

HOSTS STAR DATA CONTINUES

Star No.	Identifier	Spectral Type	Mass $M_{\odot}$	Luminosity $L_{\odot}$	T_{eff} K	[Fe/H]	P$_{rot}$ days	R_{*} $R_{\odot}$	Age Gyr	Number of planets
42	HD11964	G 5 -	1.125	-	-	-	-	-	-	2
43	HD143761[6]	G 0 V	0.95	1.94	5860	-0.19	20	1.35	10.	1
44	HD74156	G 0 -	1.27	3.06	6105	0.15	-	-	-	2
45	HD117618[6]	G 2 V	1.05	1.8	5860	0.04	-	1.3	-	1
46	HD37605[6]	K 0 V	0.8	0.74	5475	0.39	-	0.96	-	1
47	HD168443[+]	G 5IV	1.01	1.93	5555	0.03	26.8	1.5	2.7	2
48	HD3651[1]	K 0 V	0.79	0.47	5251	0.05	44.5	0.83	-	1
49	HD219449	K0III	-	-	-	0.05	-	-	-	1
50	HD101930	K 1 V	0.74	0.49	5079	0.17	46	0.93	-	1
51	HD121504	G 2 V	1.18	1.55	6075	0.16	8.6	1.27	1.2	1
52	HD178911B	G 5 V	0.87	1.3	5650	0.28	-	1.14	-	1
53	HD16141[+]	G 5IV	1.01	2.46	5770	0.22	-	1.57	-	1
54	HD114762[6]	F 9 V	0.82	1.75	6110	-0.7	-	1.18	-	1
55	HD80606	G 5 V	1.1	0.75	5645	0.43	-	0.86	-	1
56	HD216770	K 0 V	0.9	0.79	5229	0.23	35.6	1.1	3.1	1
57	HD93083	K 3 V	0.7	0.41	4995	0.15	48	1.03	-	1
58	HD117176[6]	G 5 V	1.1	3.1	5770	-0.03	34.8	1.76	8.2	1
59	HD52265	G 0 V	1.18	1.98	6060	0.21	14.6	1.35	4.	1
60	HD208487[6]	G 2 V	1.3	1.82	5860	-0.06	-	1.31	-	1
61	HD1237[5]	G 6 V	0.9	0.66	5540	0.1	12.6	0.92	0.8	1
62	HD34445	G 0 -	1.1	-	-	0.14	-	-	-	1
63	HD37124[1]	G 4 V	0.91	0.74	5556	-0.42	25	0.93	3.9	3
64	HD73526[6]	G 6 V	1.02	2.2	5700	0.28	-	1.52	-	1
65	HD104985	G 9 3	1.5	-	5410	-0.35	-	8.73	-	1
66	HD82943[+]	G 0 -	1.15	1.63	6028	0.29	18	1.17	2.9	2
67	HD169830	F 8 V	1.4	4.59	6299	0.21	8.3	1.95	2.8	2
68	HD8574	F 8 V	1.17	2.25	6080	0.05	-	1.35	-	1
69	HD202206	G 6 V	1.15	1.07	5765	0.37	9.5	1.13	5.6	2
70	HD89744[6]	F 7 V	1.4	6	6166	0.18	9	2.14	2.04	1
71	HD134987[1]	G 5 V	1.05	1.17	5917	0.23	30.34	1.02	-	1
72	HD40979[6]	F 8 V	1.1	1.97	6095	0.194	7	1.26	1.5	1
73	HD12661[6]	G 6 V	1.07	1.19	5754	0.29	36	1.096	1.47	2
74	HD150706	G 0 V	0.98	0.98	5886	-0.13	-	0.93	-	1
75	HD59686	K2III	1.1	-	4871	0.28	-	-	-	1
76	HD17051	G 0 V	1.03	1.52	6125	0.11	8	1.097	1.556	1
77	HD142[+]	G1 IV	1.15	3.24	6302	0.14	-	1.7	-	1
78	HD92788[+]	G 5 -	1.1	1.18	5821	0.34	21.3	1.07	2.1	1
79	HD28185	G 5V	0.99	1.02	5705	0.24	30	1.05	2.9	1
80	HD196885	F 8IV	1.27	-	-	0.2	-	-	-	1
81	HD142415	G 1 V	1.03	1.14	6045	0.21	9.6	1.06	1.1	1
82	HD177830	K 0IV	1.15	-	-	0.0	70.94	-	-	1

TABLE 4

HOSTS STAR DATA CONTINUES

Star No.	Identifier	Spectral Type	Mass $M_\odot$	Luminosity $L_\odot$	T_{eff} K	[Fe/H]	P$_{rot}$ days	R_* $R_\odot$	Age Gyr	Number of planets
83	HD154857[6]	G 5 V	1.17	4.95	5628	-0.23	-	2.34	5.	1
84	HD108874[6]	G 5 V	1	1.34	5770	0.23	38	1.16	-	2*
85	HD4203[1]	G 5 V	1.06	1.2	5946	0.22	43.1	1.03	-	1
86	HD128311[6]	K 0 V	0.8	0.28	5250	0.03	14	0.64	1.99	2
87	HD27442	K 2 IV	1.2	-	-	0.22	-	-	10.	1
88	HD210277	G 7 V	0.92	0.93	5570	0.24	40.8	0.91	8.5	1
89	HD19994[5]	F 8 V	1.34	3.81	6121	0.19	12.2	1.18	2.4	1
90	HD188015[+]	G 5 IV	1.08	1.44	5745	0.29	36	1.21	9.82	1
91	HD20367[+]	G 0 -	1.17	1.88	6100	0.14	-	1.23	-	1
92	HD114783[6]	K 2 V	0.92	0.4	5250	0.33	45.2	0.76	-	1
93	HD147513[5]	G 5 V	1.11	0.98	5883	0.06	4.7	1.06	0.3	1
94	HD137759	K 2 3	1.05	-	4900	0.03	-	11.01	-	1
95	HD222582[6]	G 5 V	1	1.14	5770	-0.01	-	1.07	-	1
96	HD65216	G 5 V	0.92	0.71	5666	-0.12	-	0.87	-	1
97	HD183263[+]	G 2IV	1.17	2.04	5936	0.3	32	1.35	9.91	1
98	HD141937	G 2 V	1.1	1.17	5925	0.11	13.25	1.1	1.6	1
99	HD41004A[5]	K 2 V	0.7	0.65	5010	0.16	27	0.75	1.6	1*
100	HD47536	K 0 3	2.05	-	4554	-0.54	-	-	-	1
101	HD23079[6]	G 0 V	1.1	1.5	6200	-0.11	-	1.06	-	1
102	HD186427[4]	G 5 V	1	1	5760	0.05	29.1	1	-	1
103	HD4208[1]	G 5 V	0.93	0.79	5605	-0.24	25.3	0.94	-	1
104	HD114386[5]	K 3 V	0.68	0.29	4804	0.09	-	0.73	-	1
105	HD45350[6]	G 5 V	1.02	1.38	5616	0.29	39	1.24	9.9	1
106	HD222404	K 1IV	1.59	-	4888	0.0	-	4.66	-	1
107	HD213240[+]	G 4IV	1.22	3.6	5975	0.16	15	1.77	2.7	1
108	HD10647	F 8 V	1.07	1.51	6143	-0.03	7.2	1.11	1.75	1
109	HD10697[+]	G 5IV	1.1	3.42	5770	0.15	32.6	1.85	-	1
110	HD95128[6]	G 0 V	1.03	1.11	5780	0.01	24	1.05	7.	2
111	HD190228[+]	G 5IV	0.83	3.6	5360	-0.24	-	2.2	-	1
112	HD114729[6]	G 0 V	0.93	2.16	5915	-0.22	21.58	1.4	6.	1
113	HD111232	G 5 V	0.78	0.69	5494	-0.36	30.6	0.84	5.2	1
114	HD2039[6]	G 2.5V	0.98	1.73	5675	0.1	-	1.36	-	1
115	HD136118[6]	F 9 V	1.24	2.92	6003	-0.065	12.2	1.58	3.	1
116	HD50554	F 8 V	1.11	1.45	6050	0.02	16.1	1.08	4.5	1
117	HD196050	G 3 V	1.1	1.83	5918	0.22	16	1.39	1.6	1
118	HD216437[5]	G 4 V	1.06	2.25	5887	0.25	26.7	1.03	5.8	1
119	HD216435[6]	G 0 V	1.25	4.25	5830	0.15	-	2.02	5.	1
120	HD106252	G 0 V	1.02	1.27	5890	-0.01	22.8	1.07	5.	1
121	HD23596[+]	F 8 -	1.3	2.86	6125	0.32	-	1.5	-	1
122	HD145675[5]	K 0 V	0.9	0.71	5255	0.51	41	0.92	3.9	1
123	HD142022	K 0 V	0.99	1.01	5500	0.19	38	1.25	11.5	1

TABLE 5

HOSTS STAR DATA CONTINUES

Star No.	Identifier	Spectral Type	Mass $M_\odot$	Luminosity $L_\odot$	T_{eff} K	[Fe/H]	P_{rot} days	R_* $R_\odot$	Age Gyr	Number of planets
124	HD39091[1]	G 1 V	1.1	1.36	6060	0.09	-	1.05	-	1
125	HD72659[6]	G 0 V	0.95	2.44	6030	-0.14	20.3	1.43	-	1
126	HD70642[6]	G 5 V	1.0	1.34	5670	0.16	-	1.2	4.	1
127	HD33636	G 0 V	1.12	1.07	5990	-0.05	14.3	0.99	2.8	1
128	HD22049[6]	K 2 V	0.8	0.47	5180	-0.1	12	0.85	0.7	1
129	HD117207[6]	G 8 V	1.04	1.68	5723	0.27	36	1.32	9.84	1
130	HD30177[6]	G 8 V	0.95	1.18	5320	0.2	-	1.28	-	1
131	HD50499[1]	G 1 V	1.27	2.15	6526	0.3	21	1.15	-	1
132	HD190360[+]	G 6 IV	0.96	1.27	5590	0.24	40	1.2	6.7	2
133	HD89307[1]	G 0 V	1.27	2.15	6526	-0.16	-	1.15	-	1

TABLE 6

PLANET DATA

Planet No.	Identifier	Mass M_J	R_p R_J	a AU	e	P_{orb} days	r_{av} UA	I 10^6erg/cm^{2}s	r_{ap}/r_s	i deg
1	OGLETR56b	1.45	1.23	0.0225	0.	1.212	0.0225	-	-	81.0
2	OGLETR113b	1.35	1.08	0.0228	0.	1.43	0.0228	-	-	-
3	OGLETR132b	1.01	1.15	0.0306	0.	1.69	0.0306	-	-	-
4	HD73256b	1.87	-	0.037	0.029	2.55	0.0370	5.3	0.331	-
5	GJ436b	0.067	-	0.028	0.12	2.644	0.0282	42.8	-	-
6	HD75732e	0.045	-	0.038	0.174	2.81	0.0386	557.8	0.203	-
7	HD75732b	0.84	-	0.115	0.02	14.65	0.115	62.7	0.535	-
8	HD75732c	0.21	-	0.241	0.339	44.276	0.2548	12.78	1.471	-
9	HD75732d	4.05	-	5.9	0.16	5360.	5.9752	0.023	31.21	-
10	HD63454b	0.38	-	0.036	0.	2.818	0.036	272.9	-	-
11	HD83443b	0.38	-	0.039	0.013	2.985	0.0390	787.2	0.194	-
12	HD46375b	0.25	-	0.041	0.04	3.024	0.0410	808.2	-	-
13	TrES-1b	0.75	1.08	0.0393	0.135	3.03	0.0396	428.3	-	88.2
14	HD179949b	0.98	-	0.04	0.	3.093	0.04	1692.8	0.439	-
15	HD187123b	0.52	-	0.042	0.03	3.097	0.0420	1040.5	0.251	-
16	OGLE-TR-10b	0.57	1.24	0.0416	0.	3.101	0.0416	-	-	98.2
17	HD120136b	4.13	-	0.05	0.01	3.312	0.050	1260.1	1.067	-
18	HD330075b	0.62	-	0.039	0.	3.388	0.039	420.5	0.170	-
19	HD88133b	0.29	-	0.046	0.11	3.41	0.046	1944.6	0.186	-
20	HD2638b	0.48	-	0.044	0.	3.444	0.044	330.3	0.207	-
21	BD103166b	0.48	-	0.046	0.05	3.487	0.046	1515.8	-	84.3
22	HD75289b	0.42	-	0.046	0.	3.509	0.046	1279.7	0.354	-
23	HD209458b	0.67	1.43	0.05	0.11	3.525	0.050	865.8	0.474	86.1
24	HD76700b	0.19	-	0.05	0.13	3.971	0.0504	417.5	-	-
25	OGLETR111b	0.53	1.	0.047	0.	4.0161	0.047	265.2	-	86.5
26	HD217014b	0.45	-	0.05	0.01	4.231	0.050	655.8	0.274	-
27	HD9826b	0.69	-	0.059	0.012	4.617	0.059	1330.0	0.594	-
28	HD9826c	1.89	-	0.829	0.28	241.5	0.861	6.2	10.565	-
29	HD9826d	3.75	-	2.53	0.27	1284	2.622	0.673	31.992	-
30	HD49674b	0.11	-	0.06	0.16	4.95	0.061	368.5	0.393	-
31	HD68988b	1.92	-	0.07	0.15	6.276	0.071	486.7	0.433	-
32	HD168746b	0.23	-	0.065	0.081	6.403	0.0652	351.9	-	-
33	HD217107b	1.37	-	0.074	0.13	7.126	0.0746	245.9	0.366	-
34	HD162020b	14.4	-	0.074	0.277	8.428	0.0768	57.6	-	-
35	HD160691d	0.044	-	0.09	0.	9.55	0.09	297.3	0.451	-
36	HD160691b	1.67	-	1.5	0.2	654.5	1.53	1.0	9.031	-
37	HD160691c	3.1	-	4.17	0.57	2986.	4.85	0.1	32.847	-
38	HD130322b	1.02	-	0.088	0.044	10.72	0.09	87.7	1.201	-
39	HD108147b	0.4	-	0.104	0.498	10.90	0.12	192.2	1.738	-
40	HD38529b	0.78	-	0.129	0.28	14.31	0.134	451.6	0.713	-
41	HD38529c	12.8	-	3.71	0.33	2207.4	3.912	0.53	21.322	-

TABLE 7

PLANET DATA

Planet No.	Identifier	Mass M_J	R_p R_J	a AU	e	P_{orb} days	r_{av} UA	I $10^6 erg/cm^2 s$	r_a/r_s	i deg
42	HD13445b	4.	-	0.11	0.046	15.78	0.1101	44.9	0.64	-
43	HD99492b	0.12	-	0.124	0.05	17.00	0.1241	29.9	-	-
44	HD27894b	0.62	-	0.122	0.049	17.99	0.1221	32.8	-	-
45	HD195019b	3.57	-	0.14	0.02	18.20	0.1400	62.9	0.86	-
46	HD6434b	0.39	-	0.14	0.17	21.99	0.1420	75.5	1.29	-
47	HD192263b	0.73	-	0.15	0.	24.13	0.15	20.6	1.88	-
48	Gl876b	0.56	-	0.13	0.27	30.12	0.1347	1.05	-	-
49	Gl876c	1.98	-	0.21	0.12	61.02	0.2115	0.426	-	84
50	HD102117b	0.14	-	0.15	0.	20.67	0.15	94.9	0.72	-
51	HD11964b	0.11	-	0.229	0.15	37.82	0.2316	-	-	-
52	HD11964c	0.7	-	3.167	0.3	1940.	3.3095	-	-	-
53	HD143761b	1.04	-	0.22	0.04	39.945	0.2202	54.4	1.61	-
54	HD74156b	1.86	-	0.294	0.636	51.643	0.3535	33.3	-	-
55	HD74156c	6.17	-	3.4	0.583	2025.	3.9778	0.3	-	-
56	HD117618b	0.22	-	0.28	0.29	52.16	0.2918	28.7	-	-
57	HD37605b	2.85	-	0.26	0.736	54.2	0.3304	9.3	-	-
58	HD168443b	7.73	-	0.295	0.53	58.1	0.3364	23.2	2.57	-
59	HD168443c	17.2	-	2.87	0.2	1739.5	2.9274	0.3	19.59	-
60	HD3651b	0.2	-	0.284	0.63	62.23	0.3403	5.5	2.04	-
61	HD219449b	2.9	-	0.3	-	182.	-	-	-	-
62	HD101930b	0.3	-	0.302	0.11	70.46	0.3038	7.2	1.47	-
63	HD121504b	1.22	-	0.33	0.03	63.33	0.3301	19.3	3.91	-
64	HD178911Bb	6.292	-	0.32	0.1243	71.487	0.3225	17.0	-	-
65	HD16141b	0.23	-	0.35	0.28	75.82	0.3637	25.3	-	-
66	HD114762b	11.03	-	0.35	0.34	83.895	0.3702	17.4	-	-
67	HD80606b	3.9	-	0.469	0.927	111.81	0.6705	2.3	-	-
68	HD216770b	0.65	-	0.46	0.37	118.45	0.4914	4.4	3.08	-
69	HD93083b	0.37	-	0.477	0.14	143.58	0.4817	2.4	2.37	-
70	HD117176b	7.44	-	0.48	0.4	116.689	0.5184	15.7	3.12	-
71	HD52265b	1.	-	0.49	0.35	119.1	0.5200	9.9	5.36	-
72	HD208487b	0.45	-	0.49	0.32	130.	0.5151	9.4	-	-
73	HD1237b	3.37	-	0.49	0.511	133.71	0.5540	2.9	7.24	-
74	HD34445b	0.58	-	0.51	0.4	126.	0.5508	-	-	-
75	HD37124b	0.61	-	0.53	0.055	154.46	0.5308	2.2	3.58	-
76	HD37124c	0.6	-	1.64	0.14	843.6	1.6572	0.2	11.96	-
77	HD37124d	0.66	-	3.19	0.2	2295.	3.2538	0.06	24.48	-
78	HD73526b	2.98	-	0.65	0.44	184.108	0.7129	5.89	-	-
79	HD104985b	6.3	-	0.78	0.03	198.2	0.7803	-	-	-
80	HD82943c	1.85	-	0.75	0.38	219.	0.80415	3.43	7.35	-
81	HD82943b	1.84	-	1.18	0.18	435.	1.1991	1.54	9.89	-
82	HD169830b	2.88	-	0.81	0.31	225.62	0.8489	8.67	11.82	-

TABLE 8

PLANET DATA

Planet No.	Identifier	Mass M_J	R_p R_J	a AU	e	P_{orb} days	r_{av} UA	I 10^6erg/cm^{2}s	r_a/r_s	i deg
83	HD169830c	4.04	-	3.6	0.33	2102.	3.7960	0.4334	53.4	-
84	HD8574b	2.11	-	0.77	0.288	227.55	0.8019	4.76	-	-
85	HD202206b	17.5	-	0.83	0.433	256.2	0.9078	1.77	12.9	-
86	HD202206c	2.41	-	2.44	0.284	1296.8	2.5384	0.23	34	-
87	HD89744b	7.99	-	0.89	0.67	256.6	1.0898	6.84	15.7	-
88	HD134987b	1.58	-	0.81	0.24	259.	0.8333	2.29	5.2	-
89	HD40979b	3.32	-	0.81	0.23	267.2	0.8324	3.88	13.4	-
90	HD12661b	2.3	-	0.82	0.33	263	0.8646	3.89	5.0	-
91	HD12661c	1.5	-	2.6	0.2	1530	2.652	0.41	14.3	-
92	HD150706b	1	-	0.82	0.38	264.9	0.8792	1.72	-	-
93	HD59686b	5.25	-	0.91	-	303	0.91	-	-	-
94	HD17051b	1.94	-	0.91	0.24	311.288	0.9362	2.36	14.3	-
95	HD142b	1.07	-	0.97	0.37	331.872	1.03639	3.17	-	-
96	HD92788b	3.58	-	0.96	0.35	325	1.0188	1.55	8.3	-
97	HD28185b	5.7	-	1.03	0.07	383	1.0325	1.30	5.8	-
98	HD196885	1.84	-	1.122	0.3	386	1.17249	-	-	-
99	HD142415b	1.62	-	1.05	0.5	386.3	1.18125	1.11	17.6	-
100	HD177830b	1.52	-	1.14	0.1	408.377	1.1457	-	3.6	-
101	HD154857b	1.8	-	1.11	0.51	398	1.2543	4.28	-	-
102	HD108874b	1.36	-	1.051	0.07	395.4	1.0535	1.65	5.1	-
103	HD108874c	1.02	-	2.68	0.25	1605.8	2.7637	0.24	15.2	-
104	HD4203b	3.35	-	1.09	0.51	404.224	1.2317	1.08	6.7	-
105	HD128311b	2.57	-	1.02	0.31	422	1.0690	0.27	12.4	-
106	HD128311c	2.18	-	1.1	0.25	458.6	1.1344	0.24	12.8	-
107	HD27442b	1.28	-	1.16	0.058	415.2	1.1619	-	-	-
108	HD210277b	1.3	-	1.12	0.46	434.289	1.2385	0.82	7.2	-
109	HD19994b	1.68	-	1.42	0.3	535.7	1.4839	2.35	16.1	-
110	HD188015b	1.26	-	1.19	0.15	456.5	1.2034	1.35	6.2	-
111	HD20367b	1.17	-	1.25	0.32	469.5	1.314	1.49	-	-
112	HD114783b	1	-	1.2	0.1	501	1.206	0.37	5.46	-
113	HD147513b	1.21	-	1.32	0.26	528.4	1.3646	0.71	29.2	-
114	HD137759b	8.47	-	1.28	0.72	510.833	1.6117	-	-	-
115	HD222582b	5.11	-	1.35	0.76	572.	1.7399	0.51	-	-
116	HD65216b	1.21	-	1.37	0.41	613.1	1.4851	0.44	-	-
117	HD183263b	3.69	-	1.52	0.38	634.23	1.6297	1.04	10.0	-
118	HD141937b	9.7	-	1.52	0.41	653.22	1.6477	0.59	19.0	-
119	HD41004Ab	2.436	-	1.64	0.5	924.	1.845	0.26	15.7	-
120	HD41004Bb	18.37	-	0.02	0.081	1.33	0.0201	2196.8	0.1	-
121	HD47536b	7.315	-	1.93	0.2	712.13	1.9686	-	-	-
122	HD23079b	2.5	-	1.5	0.04	738.46	1.5012	0.90	-	-
123	HD186427b	1.69	-	1.67	0.67	798.94	2.0448	0.32	15.1	-

TABLE 9

PLANET DATA

Planet No.	Identifier	Mass M_J	R_p R_J	a AU	e	P_{orb} days	r_{av} UA	I $10^6 erg/cm^2 s$	r_a/r_s	i deg
124	HD4208b	0.8	-	1.67	0.05	812.197	1.6721	0.38	10.6	-
125	HD114386b	1.24	-	1.65	0.23	937.7	1.6936	0.13	-	-
126	HD45350b	0.98	-	1.77	0.78	890.76	2.3084	0.35	13.9	-
127	HD222404b	1.7	-	2.13	0.12	905	2.1453	-	-	-
128	HD213240b	4.5	-	2.03	0.45	951	2.2355	0.98	23.1	-
129	HD10647b	0.91	-	2.1	0.18	1040	2.1340	0.45	33.2	-
130	HD10697b	6.35	-	2.12	0.12	1072.3	2.1353	1.02	11.5	-
131	HD95128b	2.54	-	2.09	0.06	1089	2.0938	0.34	3.5	-
132	HD95128c	0.76	-	3.73	0.1	2594	3.7486	0.11	24.9	-
133	HD190228b	3.58	-	2.02	0.499	1146	2.2715	0.95	-	-
134	HD114729b	0.84	-	2.08	0.32	1135	2.1865	0.62	18.5	-
135	HD111232b	6.8	-	1.97	0.2	1143	2.0094	0.23	13.4	-
136	HD2039b	5.1	-	2.2	0.69	1190	2.7237	0.32	-	-
137	HD136118	12.08	-	2.4	0.36	1208.724	2.5555	0.61	29.3	-
138	HD50554b	5.16	-	2.41	0.501	1293	2.7125	0.27	28.0	-
139	HD196050b	3.02	-	2.43	0.3	1321	2.5393	0.39	24.6	-
140	HD216437b	1.82	-	2.32	0.29	1256	2.4175	0.52	16.8	-
141	HD216435b	1.49	-	2.7	0.34	1442.919	2.8561	0.71	-	-
142	HD106252b	7.56	-	2.7	0.471	1600	2.9995	0.19	25.1	-
143	HD23596b	8.1	-	2.88	0.292	1565	3.0028	0.43	-	-
144	HD145675b	4.74	-	2.8	0.338	1796.4	2.9599	0.11	16.7	-
145	HD142022b	4.4	-	2.8	0.57	1923	3.2549	0.13	19.9	-
146	HD39091b	10.3	-	3.28	0.61	2049	3.8902	0.12	-	-
147	HD72659b	2.55	-	3.24	0.18	2185	3.2925	0.31	26.7	-
148	HD70642b	2	-	3.3	0.1	2231	3.3165	0.17	-	-
149	HD33636b	10.58	-	4.08	0.55	2928	4.6971	0.07	52.8	-
150	HD22049b	0.92	-	3.4	0.43	2548.667	3.7143	0.05	51.1	-
151	HD117207b	2.06	-	3.78	0.16	2627	3.8284	0.16	20.3	-
152	HD30177b	9.17	-	3.86	0.3	2819.654	4.0337	0.1	-	-
153	HD50499b	1.71	-	3.86	0.23	2482.7	3.9621	0.17	29.7	-
154	HD190360b	1.502	-	3.92	0.36	2891	4.1740	0.09	23.6	-
155	HD190360c	0.057	-	0.128	0.01	17.1	0.1280	101.7	0.57	-
156	HD89307b	2.73	-	4.149	0.27	3090	4.3002	0.16	-	-